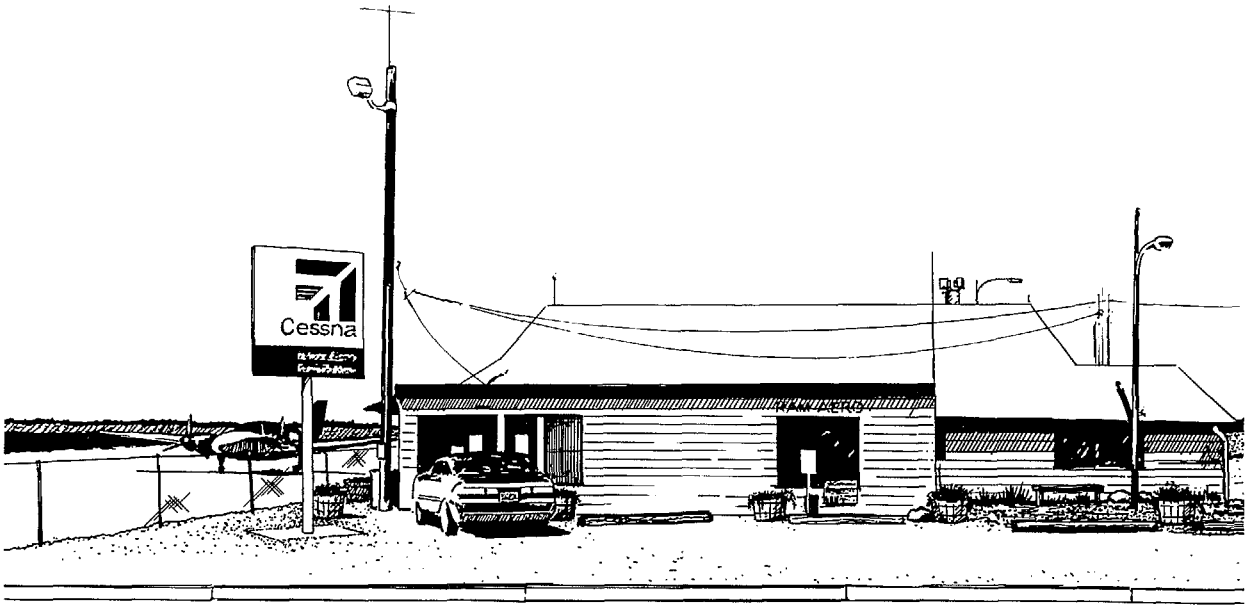
Chapter Two
INVENTORY



Chapter Two
INVENTORY

The development of a Master Plan Update for Show Low Municipal Airport required the collection and evaluation of various data relating to the airport, the community, and the surrounding area. This information included:

- Physical inventories and descriptions of facilities available and services provided at the airport.
- Background information pertaining to the airport, the City of Show Low and the White Mountain Region.
- Population and other socioeconomic statistics which might provide an indication of future development in the White Mountain Region.
- A comprehensive review of the existing local and regional plans and studies to determine their potential influence on the development and implementation of the Airport Master Plan.

A detailed, accurate and complete inventory is essential to the success of a master plan study. The conclusions, findings and recommendations made in the master plan are heavily dependent on the information collected during the study. Therefore, the information collected concerning conditions on and around the airport must be as reliable and up to date as possible.

The necessary information was obtained through on-site investigations of the airport and interviews with airport management, representatives from the City of Show Low, the Town of Pinetop-Lakeside, and Navajo County. Information was also obtained from historical records and available documents and studies concerning the local communities and the airport. Data on the entire White Mountain Region was also collected and

examined including local general plans and zoning codes, economic development interests and demographics.

AIRPORT SETTING

Show Low is located in the White Mountain region of east central Arizona. It is a rapidly growing community with a high potential for recreation and tourism. Due to its size and location, the community serves as the regional trade and services center for southern Navajo County and portions of southern Apache County. Show Low is located approximately 175 miles northeast of Phoenix and 195 miles north of Tucson.

The White Mountain region offers extensive tourism, recreation and sportsman activities. These activities are more predominate in the summer and fall. Many Phoenix area residents maintain summer homes in this area which accounts for a significant portion of the summer peak activity. However, winter tourist activity has increased significantly since the development of Apache Sunrise Ski Resort located approximately 40 miles east of Show Low.

Show Low Municipal Airport is located on the eastern edge of the city approximately one mile from downtown. The airport is located at the intersection of State Route 77 and U.S. Highway 60. The airport is not only conveniently located for the residents of Show Low but also has excellent access from all directions for the nearby communities of Pinetop-Lakeside, Taylor, Snowflake, Springerville and Heber. **Exhibit 2A** illustrates the location of Show Low Municipal Airport in its regional setting.

AIRPORT DEVELOPMENT HISTORY

Show Low Municipal Airport was originally constructed under the sponsorship of Navajo County and funded by private interests in 1946. The U.S. Forest Service approved the development and issued a special use permit for development of airport facilities. The original construction consisted of Runway 3-21, the FBO building, south apron, fuel tank and fencing.

Since 1964, Navajo County and the City of Show Low have received numerous grants for airport development. Grants have been received from both the FAA and the Arizona Department of Transportation - Aeronautics Division. These grants have been used to construct Runway 6-24, Taxiway 1 and several apron construction projects.

Airport development grants have been used to install mediuim intensity edge lighting on Runway 6-24 and Taxiway 1, and to install visual approach aids to both ends of Runway 6-24. Several pavement overlays and preservation projects have also been constructed over the years. These grants have resulted in over $2.8 million in airport development at Show Low Municipal Airport. These federal and state grants have been matched with city funds which provided approximately ten percent of total project costs. Table 2A summarizes the various airport development grants that have been received by Navajo County and the City of Show Low.

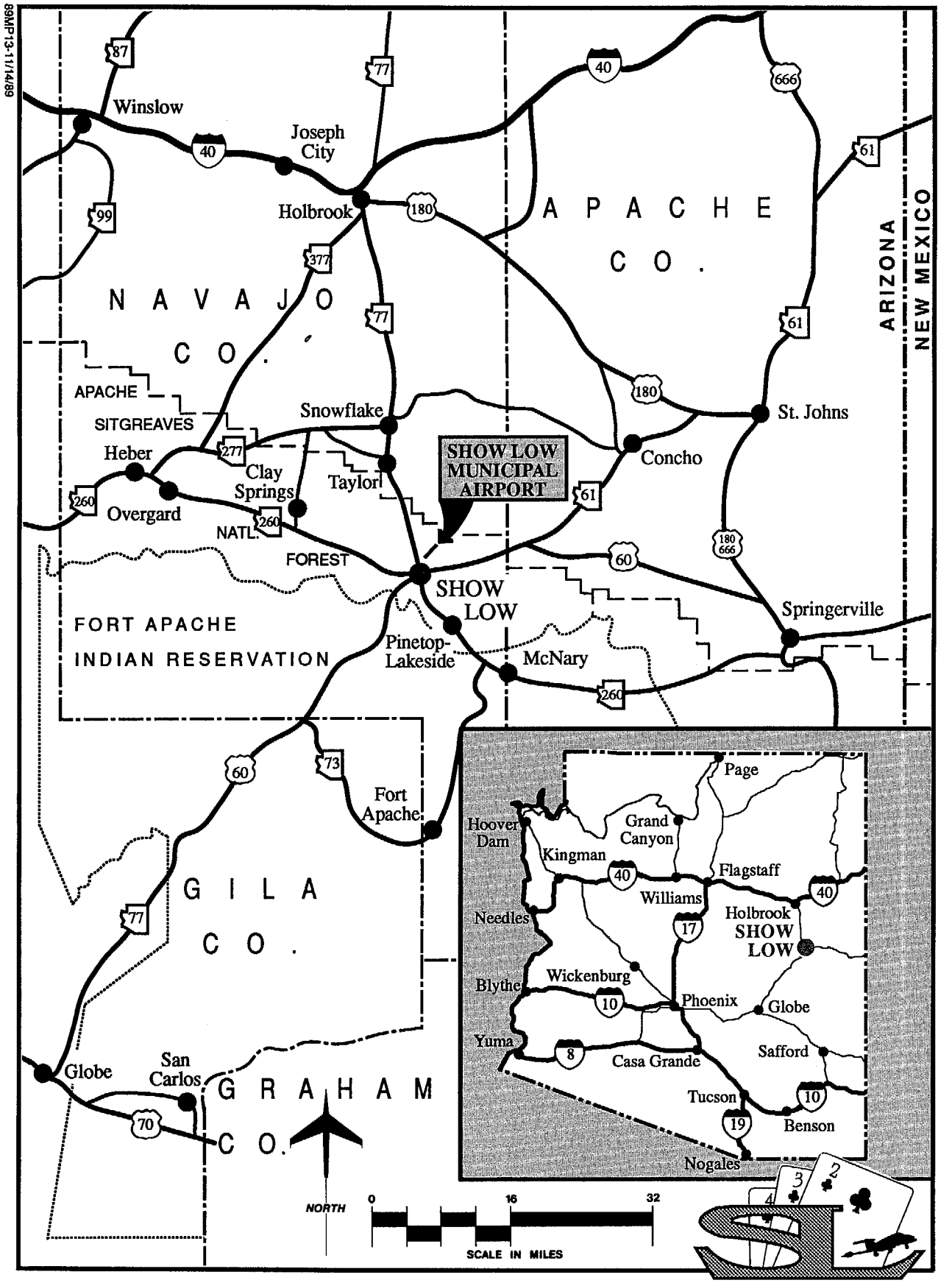


Exhibit 2A
VICINITY MAP

Show Low
MUNICIPAL AIRPORT

TABLE 2A
Show Low Municipal Airport
Development Grants

Year	Improvement	Grantor	Amount
1979	Overlay Runway 6-24 & Taxiway 1	FAA	$238,902
1981	Parking Apron Expansion	FAA	112,607
1983	Reconstruct Aircraft Parking Apron	FAA	299,890
1985	Reconstruct Taxiway 2	FAA	397,633
1988	Parking Apron Expansion PAPI, REIL	FAA	323,777
1989	Master Plan Study	FAA	66,019
1964	Unknown	ADOT	1,979
1972	Unknown	ADOT	10,450
1972	Environmental Assessment	ADOT	15,000
1973	Unknown	ADOT	125
1974	Unknown	ADOT	18,600
1979	Construct Runway 6-24 & Taxiway 1	ADOT	34,252
1980	MIRL Runway 6-24, MITL Taxiway 1	ADOT	72,000
1980	Master Plan Study	ADOT	948
1980	Utilities	ADOT	3,672
1981	Parking Apron Expansion	ADOT	113,338
1983	Non-Directional Beacon	ADOT	25,171
1984	Surface Runway 3-21	ADOT	249,393
1985	Reconstruct Taxiway 2	ADOT	19,591
1987	Reconstruct Aircraft Parking Apron	ADOT	13,132
1987	Surface Runway 3-21	ADOT	185,558
1988	Parking Apron Expansion	ADOT	289,237
1989	Parking Apron Expansion, PAPI, REIL	ADOT	116,000
1989	Seal Coat Runway 6-24, Taxiway 1 & 2, Apron	ADOT	55,800
1989	Apron Expansion	ADOT	154,800
1989	Master Plan Study	ADOT	3,241
	TOTAL		$2,821,115

EXISTING AIRPORT FACILITIES

Airport facilities are classified as either Airside or Landside. Airside facilities are those that are directly associated with aircraft operating to and from the airport. Runways, taxiways, navigational aids, and airport lighting are examples of airside facilities. Landside facilities primarily consist of facilities required to accommodate aircraft, or pilots and passengers while they are on the airport. Landside facilities typically consist of terminal buildings, hangars, aircraft parking aprons, fuel storage facilities and automobile parking. **Exhibit 2B** illustrates the layout of the existing airport facilities at Show Low Airport.

RUNWAYS

Show Low Municipal Airport currently has two paved runways available for use. Runway 6-24 is the primary runway and Runway 3-21 is utilized as a crosswind runway. Both Runway 6-24 and Runway 3-21 are paved with asphaltic concrete. Each of these runways are classified by the FAA as utility runways designed to accommodate small aircraft weighing less than 12,500 pounds and having approach speeds less than 121 knots.

Airport runways are generally oriented so as to provide maximum wind coverage for all anticipated conditions. Runway 6-24 is generally oriented east-west and has a true bearing of 076 degrees. Runway 3-21 is oriented more north-south and has a true bearing of 048 degrees.

Runway 6-24 which was constructed in 1979, is 6,000 feet long, and 75 feet wide. It has a rated pavement strength of 12,500 pounds for single wheel (SW) landing gear aircraft. The effective runway gradient is 0.0033 percent sloping downward to the west. The pavement surface is in good condition having most recently been crack sealed and seal coated in 1989. Runway 6-24 is marked as a nonprecision instrument runway.

Runway 3-21 is 3,920 feet long, 60 feet wide and was constructed in 1969. This runway also has a rated pavement strength of 12,500 pounds (SW). The effective runway gradient of Runway 3-21 is 0.33 percent sloping downward to the northeast. The runway pavement is in fair to good condition having most recently been overlayed in 1985 with a leveling course and a 1 inch porous friction course. Runway 3-21 is marked with visual runway markings.

TAXIWAYS

Taxiways are provided to facilitate aircraft movement between the runways and the terminal area. There are two taxiway sections existing at Show Low Municipal Airport. Both of these taxiway sections are constructed of asphaltic concrete, and have an estimated pavement strength of 12,500 pounds (SW). All taxiways are properly marked with centerline stripes and taxiway hold lines.

Taxiway 1 is a connecting taxiway that provides access between the two runways near mid-field. This taxiway is approximately 1,300 feet long and 42 feet wide, and provides one access point to mid-field from each of the runways. The exit from Runway 6-24 is 3,000 feet from the runway thresholds while the exit from Runway 3-21 is approximately 1,350 feet from the approach end of Runway 3. This taxiway was constructed in 1979 and is in very good condition having been seal coated along with Runway 6-24 in 1989.

Taxiway 2 is a partial parallel taxiway that serves Runway 3-21. This taxiway was constructed in 1986 and is in very good condition. Taxiway 2 was also seal coated in 1989. Taxiway 2 is 2,900 feet long and 35 feet wide. It provides access to the approach end of Runway 24, the approach end of Runway 21 and an exit from Runway 3-21 at approximately the mid-field point. Taxiway 2 is 181 feet south of Runway 3-21 (centerline to centerline).

One additional exit taxiway from Runway 3-21 is located approximately 500 feet from the approach end of Runway 3 and provides direct access to the center parking apron. This exit taxiway was constructed at the same time as the 1987 apron expansion.

NAVIGATIONAL AIDS

Navigational aids (navaids) provide direction, range and position information to pilots. Navaids are usually classified as either enroute or terminal navaids. The enroute navaids provide point-to-point navigation while terminal navaids provide approach and landing guidance. Some navaids can be used in both the enroute and terminal roles.

89MP13-11/14/89

FOREST SERVICE LAND

NDB

6000' x 75' Asphalt Runway 6-24

Property Line

To Holbrook

77

Segmented Circle/
Lighted Wind Tee

Jet A Fuel Tank

Tiedowns

Electrical
Vault

Auto Parking

Taxiway 1

Taxiway 2

3920' x 60' Asphalt Runway 3-21

SHOW LOW

FOREST SERVICE LAND

Hangars

Beacon

Hangar

Fuel

Tiedowns

Access Road

Administration
Building

Tiedown Area

Hangar

Arizona
National Guard
Armory

Property Line

To Springerville

60

FOREST SERVICE LAND

NORTH

0 600 1200

SCALE IN FEET

To Show Low

Show Low
MUNICIPAL AIRPORT

Exhibit 2B
EXISTING AIRPORT FACILITIES

There is only one navaid located in the vicinity of Show Low Municipal Airport, the Show Low Non-directional Radio Beacon (NDB). This navaid serves in both the enroute and terminal roles. The NDB may be used to direct aircraft to the Show Low area from all directions within a range of at least 25 nautical miles. The Show Low Nondirectional Radio Beacon (NDB) is the primary means of electronic navigation directly to the airport. The next closest enroute navaid is the St. Johns VORTAC located approximately 50 miles east-northeast of Show Low.

The Show Low NDB is also used for terminal navigation in the Show Low NDB-A instrument approach procedure. This approach provides nonprecision instrument guidance to the airport rather than to a specific runway. The NDB approach uses compass bearings from the NDB transmitter for course guidance.

The Show Low NDB-A approach begins over the NDB transmitter with an outbound heading of 025 degrees. This heading is maintained and a descent to 8,000 feet MSL is made. A course reversal turn is made within ten nautical miles of the airport and descent continues to 6,920 feet MSL (509 AGL). If the airport is not in sight upon reaching 6,920 feet and passing the NDB, a missed approach procedure is executed and a second approach may be made.

LIGHTING

A variety of lighting aids are available at Show Low Airport to facilitate airport identification, approach, landing, and taxiing operations at night and in adverse weather conditions. These systems are categorized by function and are further described below.

Identification Lighting: The location and presence of an airport at night is universally indicated by an airport beacon. At Show Low the airport beacon is located on top of the FBO hangar on the south side of Runway 3-21. This rotating beacon is equipped with an optical system that projects two rotating beams of light, one green and one white.

A lighted wind tee is combined with a segmented circle near midfield on the south side of Runway 6-24. The wind tee and segmented circle provide pilots with a positive visual indication of surface wind speed and direction, as well as basic information concerning airport traffic patterns.

Runway and Taxiway Lighting: Runway 6-24 is equipped with Medium Intensity Runway Lights (MIRL) which outline the Runway with white lights. Each end of Runway 6-24 is equipped with threshold lights as part of the MIRL system. This lighting system is activated by radio control and when activated will remain on for a period of 15 minutes. Taxiway 1 is equipped with Medium Intensity Taxiway Edge Lights (MITL). These lighting systems were installed in 1979.

Approach Lighting: Precision Approach Path Indicators (PAPI) are a system of lights located near a runway end which provide visual descent guidance information during an approach to the runway. The approach ends of Runway 6-24 are equipped with a two-box PAPI system. These approach light systems were installed in 1989. No approach light system is currently available on Runway 3-21.

Runway End Identifier Lights (REIL) are high intensity strobe lights that provide pilots positive identification of the landing threshold. These lights are particularly helpful during periods of low visibility or at night. The REIL system was installed at both ends of Runway 6-24 in 1989.

EXISTING TERMINAL FACILITIES

In addition to the airside facilities just described, general aviation landside facilities

are essential to the daily operation of Show Low Municipal Airport. Terminal area facilities at Show Low are located along the south side of Runway 6-24 and on the southeast side of Runway 3-21. The various elements comprising the terminal area facilities are described below.

HANGARS

Several types of hangar facilities have been constructed on the airport over the years. These include large conventional hangars, individual hangars, and T-hangars. The majority of the hangars are privately owned and in use by the individual owners.

The original conventional type hangar facility is owned by the city and is leased to a part time commercial operator. The hangar can accommodate two small aircraft. Currently the majority of this hangar is used for storage of city equipment.

A small portion of this hangar is also leased to Aero Crafters for their operations. This hangar was constructed in approximately 1946, and has very little utility left. This commercial interest intends to construct new facilities in the mid-field area and this building will no longer be suitable for commercial purposes.

A large conventional type hangar was constructed by the private sector for their personal and corporate use. This hangar was constructed in 1989 and provides 4,500 square feet of space for aircraft parking. Currently this hangar houses two aircraft; a corporate jet and a twin engine aircraft.

Numerous private T-hangars have been developed on the south side of the airport by individual aircraft owners. These hangars provide individual aircraft storage or, in some cases, multiple aircraft storage. The capacity of multiple aircraft storage units obviously will depend on the size of the aircraft. For inventory purposes, these units will be assumed to house one aircraft. There are six T-hangar units currently available at Show Low Airport.

APRONS

There are three aircraft parking aprons at Show Low Municipal Airport and a mix of local and transient parking facilities throughout the airport. The aircraft parking capacity of the airport has been expanded numerous times and currently can accommodate up to 151 aircraft in designated tiedown positions. No special provisions are available for larger aircraft that require more than one tiedown position.

The north apron is a local aircraft parking apron and is located just south of Runway 6-24 and west of Taxiway 1. This parking apron was constructed in 1977 and has 18 tiedown positions. The apron is in good condition having been seal coated in 1989. This apron has an estimated pavement strength of 12,500 pounds (SW).

The center apron is located on the north side of Runway 3-21 and west of Taxiway 1. This parking apron is used primarily for local aircraft, however, several of the parking positions in the middle of the apron are used for transient tiedowns. This apron has been expanded several times over the years, most recently in 1989 when 29 tiedowns were added. This latest expansion brings the total capacity of this apron to 109 aircraft. Except for that section constructed in 1987, this apron was seal coated in 1989, and is in very good condition. The estimated pavement strength of this apron is approximately 12,500 pounds (SW).

The south parking apron was the original apron located on the south side of Runway 3-21. This apron originally provided 47 tiedown positions, however, with the construction of Taxiway 2 in 1986 several parking positions were abandoned to provide the necessary taxiway clearance. The south

apron is in poor condition and has experienced several tiedown failures in the past during periods of high winds. This apron currently has space for approximately 25 aircraft.

Overflow aircraft tiedowns previously had been provided on what was an abandoned cinder runway. However, with the recent expansion of the center apron this aircraft parking area is no longer necessary and has been abandoned. This area previously provided tiedowns for approximately 14 aircraft.

FUEL FACILITIES

Fuel storage and dispensing is conducted by the City of Show Low. The fuel storage facilities consist of two 10,000 gallon underground storage tanks. One tank is used to store 100LL octane aviation fuel and the other is intended to store Jet A grade fuel. However the Jet A tank was constructed in 1988 and has yet to be placed into service. The 10,000 gallon Jet A tank is an underground tank located east of Taxiway 1. This tank could be placed into service with a minimum of additional improvements. The 10,000 gallon 100LL tank is also an underground tank and is located south of the south apron.

Fuel dispensing is accomplished by tanker trucks that dispense fuel directly into the aircraft where they are parked on the apron. The city operates two fuel dispensing trucks, eliminating the need for a fuel island. One truck is used for 100LL and has a capacity of 1,600 gallons. The other truck currently serves as both storage and dispensing for Jet A fuel and has a capacity of 5,500 gallons.

GENERAL AVIATION TERMINAL

The general aviation terminal building was built in 1980 and has approximately 760 square feet of usable space. The terminal building is located in the mid-field area west of Taxiway 1. The mid-field area serves as the focal point for most airport operations and general aviation activity.

Airport management and administrative services are provided by the City of Show Low. These functions are housed in the general aviation terminal building. In addition to airport management the terminal building also accommodates fuel sales, weather observation and reporting, aircraft traffic advisory services, maintenance and snow removal. The terminal building also provides public facilities, vending machines and storage space.

There are no other airport administration functions or facilities on the airport. Other city services such as, engineering and emergency services are provided by various city departments.

OTHER BUILDINGS

The Arizona Air National Guard leases a parcel of airport land from the city. This parcel is on the south side of the airport along U.S. Highway 60. These facilities include a recently constructed armory building and a fenced area with quonset huts and open storage. These facilities have very little to do with airport operations other than the commitment of airport property.

The Civil Air Patrol (CAP) also occupies a small parcel of land on the airport. The CAP has placed a converted mobile home southwest of the FBO hangar and uses it as a command post during search and rescue operations, and for training and storage. The CAP uses this property without benefit of a lease and could easily be relocated without disruption. The CAP also has little influence on airport activity but is important because of their mission and impact on aviation safety.

AIRPORT ACCESS AND AUTOMOBILE PARKING

Access to the airport is available directly from U.S. Highway 60 along the south side of the airport. The current airport entrance road is a relatively unimproved two lane gravel road. This road splits just inside the airport boundary. The main portion of the road leads directly to the terminal building while the alternate road provides access to the FBO building.

Plans are currently underway to improve the entrance road (Airport Road) and FBO access road. The airport entrance road will be a paved two lane roadway with drainage channels and culverts under crossings. The roadway will be 28 feet wide and provide a traffic loop (Loop Road) around the terminal area. Airport and Loop roads are planned to be constructed in the spring of 1990. The FBO access road (Corporate Way) will also be paved to a 28 foot width, however, funds are not currently available to construct Corporate Way.

Automobile parking is provided adjacent to each of the major areas of activity. The majority of the auto parking is provided adjacent to the terminal building. This area has an unmarked gravel surface that can accommodate approximately 120 vehicles. Both long term and short term auto parking is available in this area. Approximately 75 percent of this parking is dedicated to long term parking and vehicle storage. In addition, a limited amount of short term or daily parking is available directly in front of the terminal building. Other unimproved parking areas are available adjacent to the FBO buildings.

UTILITIES

The availability and capacity of utilities serving the airport are important factors in determining the development potential of the airport property. Of primary concern in the inventory investigation is the availability of water, sanitary, sewer, gas, and electricity. Some, if not all, of these utilities will be necessary to support any future development.

Water is provided by the City of Show Low through the municipal water system. The water for the airport is connected to an eight inch water main adjacent to U.S. Highway 60. An eight inch service line comes onto the airport at approximately the entrance to the National Guard Armory and terminates at the FBO building. A six inch service line provides water to the terminal building.

The sewer requirements of the airport are met by a combination of the city sewer system and septic system. The development on the south side of Runway 3-21 is connected to the city sewer system. The sewer line extends from the FBO building along Corporate Way and ties into the sewer main along Highway 60 just east of the airport entrance. The terminal building is connected to a septic system that currently services only the terminal building. The size of the tanks and the capacity of the system are unknown.

Natural gas in the area is supplied by Southern Union Gas Co. In Show Low, a natural gas pipeline is in place along Highway 60 but no connection has been made to supply gas to the airport. This pipeline may be tapped to provide natural gas to most areas of the airport.

Electricity to the airport is provided by Arizona Public Service Company. Transmission lines parallel Highway 60 on the south side of the airport. A service line brings power onto the airport near the entrance to the National Guard Armory. This service line runs above ground to the FBO building and then goes underground and extends to the terminal building.

All utilities appear to have adequate capacity for existing demands. However, the water line should be looped to tie in to the main line at another location to provide consistent

pressure and system reliability. The sewer line should be extended to connect with the terminal building and provide service for future terminal area development in the mid-field area.

AIRSPACE AND AIR TRAFFIC CONTROL

An analysis of the airspace structure in the vicinity of Show Low Municipal Airport is necessary to determine the operational interaction among the various types of airspace and airspace users. Flights into Show Low Airport can be conducted using either Instrument Flight Rules (IFR) or Visual Flight Rules (VFR).

Instrument Flight Rules are those which govern the procedures for conducting instrument flight under all weather conditions. Visual Flight Rules govern the procedures for conducting flight under visual weather conditions. Visual weather conditions exist when flight visibility is three miles or greater and the cloud ceilings are at least 1,000 feet above the surface.

Show Low Municipal Airport does not have an air traffic control tower, therefore, no formal terminal traffic control services are available. However, air traffic advisories and weather information services are provided by airport staff on the UNICOM frequency. Enroute air traffic control services are provided by the FAA through the Albuquerque Air Route Traffic Control Center.

The airspace system in the vicinity of Show Low Municipal Airport is relatively simple in comparison to places like Los Angeles or Phoenix. The lack of competing airports, or special use airspace and the absence of any specified aircraft requirements are very desirable for general or aviation pilots. **Exhibit 2C** illustrates the location of nearby airports, the types of airspace around Show Low and the extent of their influence on activity into and out of the airport.

Taylor Airport, which is located approximately 15 miles north-west of Show Low is the nearest public use airport. This airport has a single runway oriented northeast-southwest. Runway 3-21 is 5,100 feet long and 50 feet wide. Taylor is located far enough from Show Low that traffic from Taylor Airport should not impact Show Low traffic.

White Mountain Lake Airport is a privately owned airport located six miles north of Show Low. This airport is a private "sky ranch" type development and has very little traffic. The airport has a 4,000 foot paved runway which is oriented in a southeast-northwest direction. VFR aircraft traffic departing to the southeast could potentially conflict with traffic departing Show Low to the northeast.

White Mountain Lake Airport lies within the control zone extension for instrument operations into Show Low, however, this should not create a conflict since there would be no traffic operating from White Mountain Lake Airport during IFR conditions.

Several Victor Airways transit the area around Show Low primarily east-west and provide enroute navigation. These airways are often referred to as "highways in the sky". They provide a means of radio navigation that is used by almost all general aviation aircraft. Victor airways begin at 3,000 feet above the ground and extend upward to 18,000 feet MSL and are four nautical miles wide.

Victor 190 (V-190) passes approximately ten miles south of Show Low Municipal Airport. V-190 connects between the St. Johns VORTAC directly to the Salt River VORTAC. V-258 passes nine miles north of Show Low and also connects between the St. Johns and Salt River VORTACs. V-258 is routed more westerly before turning south to avoid the Military Operations Area southwest of Show Low when it is active. V-264 passes 30 miles northeast of Show Low and runs

northwest from the St. Johns VORTAC and connects directly with the Winslow VORTAC. These Airways do not affect Show Low Airport traffic except to provide close and convenient access to the enroute navigation system.

Other special use airspace in the region is the Williams 4 Military Operations Area (MOA) which is located west and south of Show Low. This area is reserved for military use and serve as caution areas for civil aircraft. The boundary of the MOA lies approximately one mile southwest of the airport. The Williams 4 MOA begins at 14,000 feet MSL and extends to 18,000 feet MSL. This reserved airspace area presents little or no influence on arriving or departing aircraft from Show Low due to the high floor of the MOA airspace.

SOCIOECONOMIC CHARACTERISTICS

A variety of historical and forecast socioeconomic information, related to the Show Low area and Navajo County, was collected for use in various elements of the Master Plan. This information is essential in determining aviation service level requirements, as well as forecasting the number of based aircraft and aircraft activity at the airport. The aviation forecasts are normally directly related to the population base, economic strength of the region, and the ability of the region to sustain a strong economic base over an extended period of time. This type of data provides valuable insights into the character of the community and how these characteristics will effect aviation demand.

POPULATION

Show Low Municipal Airport is the largest and most capable airport in the central White Mountain Region. The Show Low Municipal Airport service area extends well beyond the municipal boundary of the city. For purposes of this Master Plan Study, the generalized service area will include the communities of:

- Show Low
- Pinetop-Lakeside
- Snowflake
- Taylor
- Heber/Overguard
- Linden
- Shumway
- White Mountain Lakes

In addition to the resident population of the above communities, there is a rural population that needs to be included within the service area population. It is estimated that an additional eight to ten percent should be added to the total populations of the communities within the service area to account for these smaller settlements and ranches within the region.

The population growth in this region will have a direct relationship to the need for additional aviation facilities and services. People need air transportation; air transportation requires aircraft; and aircraft and passengers require airport facilities and services. Therefore, the need for additional airport facilities will certainly increase as the population within the region continues to grow.

The permanent resident population for Show Low is expected to increase 62 percent between 1989 and 2010. A similar increase in population is expected within the airport service area. This area is expected to grow by 61 percent by 2010. In contrast, the Navajo County population is projected to increase by less than 40 percent between 1989 and 2010. The growth rate projected for both the City of Show Low and the airport service area is half again that projected for Navajo County. This would indicate that the majority of growth in the County is occurring in the communities served by Show Low Municipal Airport.

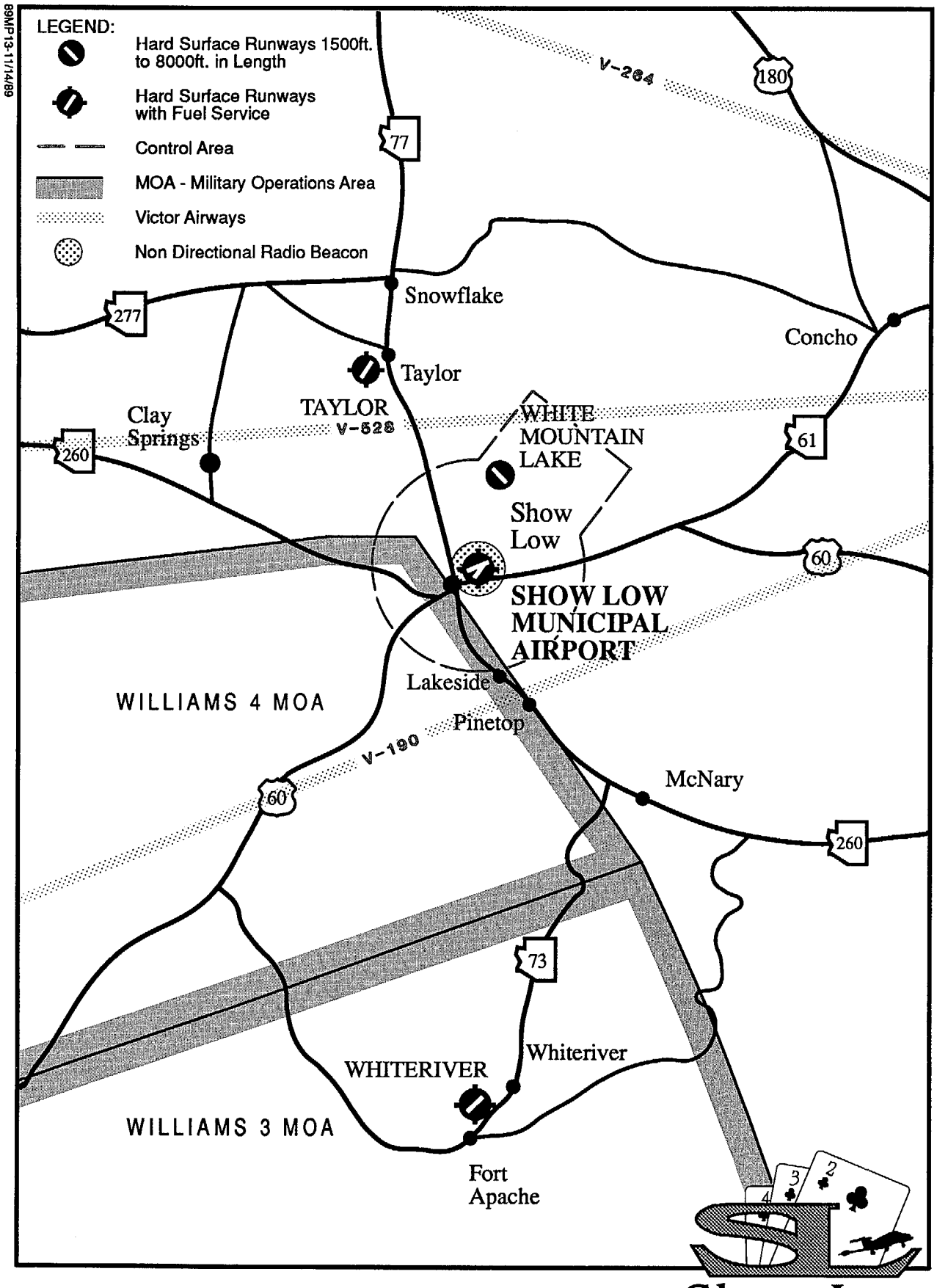


Exhibit 2C
VICINITY AIRSPACE

In addition to the permanent resident population, there is a significant seasonal population that also must be considered. This seasonal population consists largely of residents from the Phoenix and Tucson areas that have summer homes in the Show Low area. These seasonal residents not only have an impact on the local economy, they also contribute greatly to the need for aviation facilities and services.

Estimating the magnitude and impact of the seasonal population is at best difficult. Recent estimates of seasonal population range from 50 to 100 percent, depending on the area included and the methodology used. A recent study of the economic impact of the White Mountain Region estimates that the seasonal residents could be as high as 7,500 persons. A 1987 transportation plan estimated the seasonal population of Show Low and Pinetop-Lakeside area to be over 10,000 persons. These two studies reflect seasonal populations of 36 percent and 63 percent respectively.

Due to the relatively mobile and affluent nature of the seasonal population, the need for aviation facilities will be higher than that of the permanent population on a per capita basis. Therefore, for purposes of this Master Plan, a higher factor of 67 percent will be applied to the permanent population for determining the adjusted service area population.

Population growth trends for the City of Show Low, the airport service area, and Navajo County are shown in Table 2B. The table indicates both historical data and the most recent future projections.

Table 2B

Population Growth
Historical and Projected

Year	City of Show Low	Airport Service Area[1]	Navajo County
1960	1,625	2,607[2]	37,994
1970	2,129	4,994[3]	47,559
1980	4,289	12,029	67,629
1989	5,795	19,895[4]	83,900
1990	5,990	20,515	85,700
1995	6,800	23,530	94,300
2000	7,500	25,740	101,900
2005	8,400	28,975	110,100
2010	9,395	32,070	117,300

Source: Arizona Department of Economic Security (March 1989)

1 Historical data on portions of the airport service area were not available, therefore, populations will be understated.

2 Only Show Low and Snowflake were incorporated in 1960.

3 Taylor incorporated in 1966.

4 Pinetop-Lakeside incorporated in 1984.

ECONOMY AND EMPLOYMENT

The Show Low area economy is dominated by the tourism and recreation industries. In the summer months the Show Low area serves as a mountain retreat for residents from the Phoenix and Tucson metropolitan areas. In the winter months the area provides easy access to Sunrise Ski Resort and vast areas for cross country skiing as well. The White Mountain Area provides year round opportunities for hiking, fishing, camping and observing nature.

Due to its size and location, the City of Show Low serves as a regional trade and services center for southern Navajo County. Numerous small rural settlements and unincorporated communities rely on Show Low for providing essential goods and services to these outlining areas.

Wholesale businesses include two oil company bulk plants, three wholesale lumber companies, three ready-mix concrete plants, and four bottled gas firms. Navajo County business offices as well as the Continental Telephone regional headquarters are also located in Show Low. Agriculture also has a significant impact on the local economy. Cattle ranching and timber harvesting are the principle agricultural activities. Saw mills and mining are the major manufacturing enterprises. Table 2C illustrates the employment structure within the City of Show Low and Navajo County by type of business.

The economy of this region of the state has not benefitted as fully in the economic growth that has taken place in Arizona during the 1980's. During this period there has been sporadic growth in various segments of the local economy. The local economic base is relatively small and as such is quite sensitive to any fluctuations. A slight or even temporary contraction in a single industry can have far reaching effects throughout the economy. Tourism, recreation and the services sector have been the stabilizing factors in this economy. These elements are the most dependent on the seasonal population for growth. Although the local economy has not expanded as rapidly as other parts of the state, economists still consider the prospect for long term economic growth to be good.

Table 2C
Employment Structure

	Show Low Percent Employed	Navajo County Percent Employed
Economic Sector		
Manufacturing	8.6	9.8
Mining, Agriculture	3.7	6.7
Construction	21.8	5.5
Transportation, Communication, Utilities	9.7	6.8
Wholesale, Retail Trade	25.0	19.7
Finance, Insurance, Real Estate	7.4	2.0
Services	19.9	22.5
Government	3.9	26.4
Total Wage & Salary Employment	1,881	26,256
Unemployment Rate	6.3%	12.5%

Source: Arizona Department of Economic Security, 1988 estimates.

Unemployment in Show Low is currently estimated at 6.3 percent, a relatively low rate in comparison with Navajo County as a whole, which has an unemployment rate of 12.5 percent. In contrast, all other communities in the region have significantly higher unemployment rates than Show Low. This tends to confirm that Show Low is the major economic, trade and service center in the White Mountain Region. In Show Low 48 percent of the employment is provided by ten employers. The ten largest firms in terms of employment in the Show Low area are listed in Table 2D.

Table 2D
Major Employers in Show Low

Firm	Product	Number of Employees
Continental Telephone	Telephone	175
Show Low Schools	Education	172
Navapache Hospital	Medical	150
Maxwell Enterprises	Motels	100
City of Show Low	Government	67
Bayless	Grocery	60
Fuller Ford	Auto Dealer	50
Safeway	Grocery	47
Reidhead Lumber	Sawmill	40
U.S. Post Office	Government	35

Source: City of Show Low socioeconomic report, 1986.

One significant employer in the region is not listed in the table for Show Low. This is Stone Container and is Arizona's only pulp and paper mill. This mill is located fifteen miles west of Snowflake on a 640 acre site. Stone Container employs approximately five hundred permanent employees, supplemented by another 500 employees that work as woodcutters, truck drivers, or other plant affiliated jobs.

EXISTING LAND USE

The City of Show Low has recently updated and adopted the city's General Plan. The General Plan is the basis for all land use regulation in the city. Local regulations such as Zoning Ordinances, Subdivision Regulations, and Floodplain Management Ordinances are being developed to implement the General Plan.

Currently the City of Show Low has Residential areas that are mixed with a variety of housing types. Multi-family dwellings are interspersed throughout the city. Mobile homes are not only located in mobile home subdivisions but throughout the other residential sections of the city. The value and sizing of housing is widely varied in the older areas of the city.

The Commercial development in Show Low is strip development concentrated along Deuce of Clubs (U.S. Highway 60) and South White Mountain Road (Highway 260). The commercial core has a wide variety of commercial, warehouse, and professional uses. Show Low has undeveloped industrial space in the eastern portion of the city. These areas support heavy industrial uses with unscreened outdoor storage of inventory and equipment. The City of Show Low, in partnership with a private landowner, are

developing a 71 acre industrial park off State Highway 77.

Exhibit 2D shows the existing generalized land use plan in the vicinity of Show Low Municipal Airport. The land use categories shown on the map were selected to conveniently fit the requirements of aircraft noise and land use compatibility planning.

The "residential" category includes those areas that are predominately single-family homes, mobile homes, apartments and multi-unit dwellings. The "commercial" category includes retail, office, business and restaurants and motels. The "Industrial" category includes manufacturing, utilities, salvage, and warehouses. The "open" category includes parks, recreation, forest, agriculture, and vacant land. The "airport" category obviously is for airport purposes.

The area north and east of the airport is undeveloped rangeland that is under the jurisdiction of the U.S. Forest Service. This area is part of the Apache-Sitgreaves National Forest. Currently this land is being leased for grazing purposes. There is no urban development within two miles on the north or east sides of the airport.

The area south is currently being used for either commercial or industrial purposes. The area west of the airport supports a variety of commercial and industrial activities. The nearest residential development is approximately one mile west of the airport on the west side of Show Low Creek.

CLIMATE

Weather conditions play an important role in the planning and development of an airport. Temperature is an important factor in determining runway length. Wind speed and direction are used in determining optimum runway orientation. The percentage of time that visibility is impaired due to cloud coverage or other conditions is a major factor in determining the need for navigational aids and lighting.

The climate of the Show Low Area is very good for general aviation flying activity with 278 days of sunshine a year. Annual precipitation is slightly more than 20 inches with most of this falling during the months of July through October, during the thunderstorm season. During this season there are periods of low visibility due to heavy rain and high winds during thunderstorm passage. Occasional ground fog may also occur during the morning hours in the fall and spring months. Table 2E shows average daily temperature and amount of precipitation and sunshine by month.

Table 2E
Weather Summary

Month	Avg. Daily Temperature (°F) Max.	Min.	Avg. Total Precipitation (inches)	Avg. No. of Days of Sunshine
January	44.2	17.7	0.84	20
February	48.3	21.0	1.73	20
March	53.8	25.4	2.01	22
April	63.9	32.1	0.80	23
May	73.0	38.5	0.69	26
June	82.8	47.6	0.31	26
July	85.8	55.5	3.09	23
August	85.9	54.1	2.94	25
September	79.4	47.6	2.02	26
October	68.5	35.7	1.69	25
November	55.3	24.8	1.82	22
December	45.6	18.9	1.74	20
YEAR	65.3	34.9	20.68	278

Average total snow, sleet and hail annually: 38.2 inches
Source: U.S. Weather Bureau

The wind pattern at Show Low Municipal Airport has generally been calm winds from sunset to sunrise and generally light to moderate southerly and southwesterly winds during daylight hours. These winds begin with light breezes in the morning and increase in intensity into the afternoon. Thunderstorms and frontal passage will upset this flow occasionally and it is not uncommon to see winds rise above 50 miles per hour for short periods whenever these situations occur.

SUMMARY

This chapter has examined those factors and issues that will have the greater effect on the future of Show Low Municipal Airport. The research and data collection has produced the data base necessary to perform various anlayses, and the proper perspective from which to develop a realistic Master Plan that will meet the needs not only of Show Low, but the entire White Mountain Region.

The next chapter will examine the current aviation demands being experienced by the airport and how these demands can be expected to change in the future. Projections of aviation activity through the year 2010 will be prepared in order to provide the necessary guidelines so important for long range planning.

SHOW LOW CORPORATE BOUNDARY

AIRPORT PROPERTY LINE

LEGEND:

- Residential
- Commercial
- Industrial
- Airport Use
- Open

SHOW LOW MUNICIPAL AIRPORT

Show Low

MUNICIPAL AIRPORT

Exhibit 2D

GENERALIZED FUTURE LAND USE